

MSSA 2019 TECHNICAL FORUM PROGRAMME

MONDAY, 2 DECEMBER 2019		
07:00 – 08:25	Registration (Athene Conference Centre Foyer)	
08:25 – 10:20	TECHNICAL FORUM – SESSION 1 “FACILITIES AND TRAINING” Athene 2 & 3 <i>Chair: Mike Lee</i>	
08:25 – 08:30	Jaco Olivier	Welcome and Opening Remarks
08:30 – 09:00	Luc Harmsen (Plenary)	Invitation to a discussion on training and the development of skills
09:00 – 09:30	Eaazhisai Kandiah (Keynote)	International Cryo-EM facility at the ESRF, the European Synchrotron: Current Status and Perspectives
09:30 – 10:00	Margaret Ward (Keynote)	An Overview of the Nano-Micro Manufacturing Facility
10:00 – 10:20	Mike Lee	Applications for microscopy analysis: How much information is required by the microscopist?
10:20 – 11:00	Morning tea break (Exhibition Hall)	
11:00 – 12:00	TECHNICAL FORUM – SESSION 2 “INSTRUMENTATION – TEM” Athene 2 & 3 <i>Chair: Johan Westraadt</i>	
11:00 – 11:20	Alan Robins	Precession Enhanced Electron Diffraction Applications for TEMA
11:20 – 11:40	Anil Yalcin	Thermo Scientific Spectra high end S/TEM platform, the microscope answering all materials science questions
11:40 – 12:00	Andy Yarwood	An Introduction to the latest integrated JEOL TEMs
12:00 – 13:00	Lunch break (Exhibition hall)	
12:15 – 13:00	Zeiss Lunchtime Workshop: LSM9 family: Your Next Generation Confocal for Fast and Gentle Multiplex Imaging – presented by Dr Soren Prag (Athene 2 & 3)	
13:00 – 14:10	TECHNICAL FORUM – SESSION 3 “TECHNIQUES” Athene 2 & 3 <i>Chair: Jaco Olivier</i>	
13:00 – 13:30	Roland A. Fleck (Keynote)	Applying cryo techniques in both light and electron microscopy
13:30 – 13:50	Soren Prag	Novel Computational Solutions from ZEISS
13:50 – 14:10	Laurenco Torres	Enhance 3D Biological Specimen Imaging with “Computational Clearing”
14:10 – 15:30	TECHNICAL FORUM – SESSION 4 “INSTRUMENTATION – GENERAL” Athene 2 & 3 <i>Chair: Jacques O’Connell</i>	
14:10 – 14:30	Marek Dosbaba	Applications of TESCAN Integrated Mineral Analyzer (TIMA) in mineralogy and petrology
14:30 – 14:50	Keith Dicks	Fibre Optically Coupled CMOS EBSD Detector - Ultimate sensitivity and speed in a single detector
14:50 – 15:10	Andrew Yarwood	A new approach to fully integrated FESEMs
15:10 – 15:30	F. Odun-Ayo	From Macro to Nano: Nikon’s A1R HD25 and N-SIM
15:30 – 16:00	Afternoon tea break (Exhibition Hall)	

16:00 – 17:30	TECHNICAL FORUM – SESSION 5 “TECHNIQUES” Athene 2 & 3 <i>Chair: James Wesley-Smith</i>	
16:00 – 16:20	Yu Sugimoto	Atomic resolution imaging and EDX/EELS analysis by FE-SEM at 30kV and below
16:20 – 16:40	Daniel Phifer	Exploring (S)TEM sample preparation and 3D serial slicing with alternative PFIB species
16:40 – 17:00	Lesley Andrews	The use of LA-ICP-MS to reinforce EPMA trace element results in gold ore
17:00 – 17:10	Jaco Olivier	Closing remarks
17:30 – 21:00	Ice Breaker – sponsored by Carl Zeiss Exhibition Hall (Athene Conference Centre Foyer)	

MSSA 2019 CONFERENCE SCIENTIFIC PROGRAMME

TUESDAY, 3 DECEMBER 2019		
07:00 – 17:30 Registration Open (Athene Conference Centre Foyer, Exhibition Hall)		
08:30 – 10:00 Opening Plenary Session (Athene 2 & 3) <i>Chair: Johan Westraadt</i>		
08:30 – 08:45 Welcome & Opening (Chantélie Baker)		
08:45 – 09:00 Introduction of Plenary Speaker (Johan Westraadt)		
09:00 – 10:00 John Matthews Lecture – “RECENT ADVANCES IN SIMULATION-ASSISTED ELECTRON BACKSCATTER DIFFRACTION” – presented by <i>Marc de Graef</i>		
10:00 – 10:30 Morning tea / coffee break (Exhibition Hall)		
10:30 – 12:30 Material Sciences Oral Presentations – Session 1 Athene 2 <i>Chair: Jan Neethling</i>	10:30 – 12:30 Material Sciences Oral Presentations – Session 2 Athene 3 <i>Chair: Jaco Olivier</i>	10:30 – 12:30 Life Sciences Oral Presentations – Session 1 Athene 4 <i>Chair: James Wesley-Smith</i>
10:30 – 10:50 IN SITU OBSERVATION OF DEFECT FORMATION IN SHI INDUCED TETRAGONAL TRACKS IN MONOCLINIC ZIRCONIA - M. Lee	10:30 – 10:50 EFFECT OF DIFFERENT COPPER ADDITIONS TO T10.1T1.7N1.6Zr - L. Chown	10:30 – 10:50 NANOPLASTICS IN ZEBRAFISH USING RAMAN IMAGING AND SCANNING ELECTRON (RISE) MICROSCOPY - M. Waldron
10:50 – 11:10 MICROSTRUCTURAL CHARACTERISATION OF SWIFT HEAVY ION INDUCED CRYSTAL ROTATION IN SINGLE CRYSTAL NiO - D. Venter	10:50 – 11:10 MICROSTRUCTURAL AND CHEMICAL CHARACTERISATION OF SPARK PLASMA SINTERED Ti-Ta-Zr POWDERS - L. Bayode	10:50 – 11:10 FIRST RECORDS OF THE GENUS <i>Polycycla</i> (MOBILIDA: URCEOLARIIDAE) FROM HOLOTHURIAN HOSTS IN AFRICA - G.P. de Jager
11:10 – 11:30 EXPERIMENTAL VERIFICATION OF A COMPUTATIONAL APPROACH TO STUDY SHI IMPACT KINETICS - J.H. O’Connell	11:10 – 11:30 LOW-TEMPERATURE MARTENSITE DECOMPOSITION IN LPBF-PRODUCED Ti6Al4V - G. Ter Haar	11:10 – 11:30 MORPHOLOGY OF THE LUNG OF THE RED-EARED TERRAPIN (<i>Trachemys scripta elegans</i>) - S. Schoeman
11:30 – 11:50 THE EFFECT OF SHI-IRRADIATION ON THE MICROSTRUCTURES OF YAP, YAG & YIG - A. Janse van Vuuren	11:30 – 11:50 MICROSTRUCTURE EVOLUTION IN HYDROGEN TEMPERED AND NON-HYDROGEN TEMPERED Ti-6Al-4V MARTENSITE - V. Vilane	11:30 – 11:50 DIVERSITY OF SESSILINE CILIATES (PERITRICHA: SESSILINA) FROM FISH IN TASMANIA, AUSTRALIA - L. Basson

11:50 – 12:10 DOPING OF ZrO ₂ LAYER ON ZIRLO FOR PREVENTION OF HYDROGEN PICKUP - S. Ngongo	11:50 – 12:10 INFLUENCE OF OXYGEN ON THE MICROSTRUCTURAL DEVELOPMENT OF Ti-46.5Al-0.8Ta (at.%) ALLOY PRODUCED BY SPS - P.V. Cobbinah	11:50 – 12:10 NEMATODES COLLECTED FROM LEAF LITTER IN JONKERSHOEK NATURE RESERVE, STELLENBOSCH - G.P. de Jager
12:10 – 12:30 HELIUM ASSISTED MIGRATION OF SILVER IMPLANTED INTO SiC - C. Maepa	12:10 – 12:30 MICROSTRUCTURAL ANALYSIS OF Ti-Cu ALLOYS FOR DENTAL APPLICATIONS - N.D.E. Masia	12:10 – 12:30 A WATER-COLLECTING BIOSURFACE IN THE AVIAN NASAL VESTIBULE - M. Crole / J. O'Connell
12:30 – 14:00 Lunch Break (Exhibition Hall)		
13:00 – 13:45 Advanced Laboratory Solutions / JEOL Lunchtime Workshop: Ensuring that you get the best out of your TEM (TEM User Meeting) – presented by <i>Andy Yarwood</i> (Athene 4)		
14:00 – 15:00 Material Sciences Oral Presentations – Session 3 Athene 2 <i>Chair: Jacques O'Connell</i>	14:00 – 15:00 Material Sciences Oral Presentations – Session 4 Athene 3 <i>Chair: Rob Knutsen</i>	14:00 – 15:40 Life Sciences Oral Presentations – Session 2 Athene 4 <i>Chair: Ben Loos</i>
14:00 – 14:20 INTERFACIAL MICROSTRUCTURE OF WC-6wt.%Co TORCH BRAZED JOINTS USING Ag-BASED FILLER ALLOY - N.P. Mphasha	14:00 – 14:20 RAMAN IMAGING AND SCANNING ELECTRON MICROSCOPY (RISE) ON THERMO REGULATING FIBERS - M. Waldron	14:00 – 14:20 INVESTIGATING THE AUTOPHAGY MACHINERY AND ITS CARGO - A CLEM APPROACH - B. Loos
14:20 – 14:40 EFFECT OF VC, Cr ₃ C ₂ AND Ru ADDITIVES ON THE MECHANICAL PROPERTIES OF WC-10Co - S.T. Luthuli	14:20 – 14:40 PRODUCTION AND PROPERTIES OF A MALEATED CASTOR OIL-POLYSTYRENE POLYMER MATRIX - L. Ferreira	14:20 – 14:40 AN ADDITIONAL ROLE OF AHSV VIRUS INCLUSION BODIES AS SITES FOR VIRUS PROTEIN SYNTHESIS - L. Yssel
14:40 – 15:00 EFFECTS OF TiC ₇ N ₃ AND WC ADDITIONS ON NbC-BASED INSERTS DURING TURNING OF STRUCTURAL STEEL - R.M. Genga	14:40 – 15:00 MORPHOLOGICAL DEGRADATION AND (BIO)DEGRADATION OF LDPE FILMS TRIGGERED WITH BIOBASED PRO-OXIDANT ADDITIVES - A. Gada	14:40 – 15:00 COLOCALISATION OF AFRICAN HORSE SICKNESS VIRUS NON-STRUCTURAL PROTEIN NS4 WITH CELLULAR AND VIRAL PROTEINS - S. Boughan
15:00 – 15:20 Afternoon tea / coffee break (Exhibition Hall)		15:00 – 15:20 AHSV NON-STRUCTURAL PROTEIN NS4 INTERFERES WITH JAK-STAT SIGNALING AND SUPPRESSES HOST INNATE IMMUNITY - G.V. Wall

<p>15:20 – 17:30 Material Sciences Poster Session – sponsored by JEOL <i>Chair: Arno Janse van Vuuren</i></p>	<p>15:20 – 15:40 THE EFFECT OF MODIFIED CITRUS PECTIN ALGINATE PROBIOTIC ON FAECAL LACTOBACILLI IN BALB/C MICE - F.O. Odun-Ayo</p>
<p>Time Poster Board: Presenter:</p> <p>15:20 – 15:25 MAT 001 B. Shaku 15:25 – 15:30 MAT 002 R van der Merwe 15:30 – 15:35 MAT 003 L.R. Mosiane 15:35 – 15:40 MAT 004 C.M. Masemola 15:40 – 15:45 MAT 005 S. Ngqoloda 15:45 – 15:50 MAT 006 O. Mkhari 15:50 – 15:55 MAT 007 M.E. Maja 15:55 – 16:00 MAT 008 T.I. Buthelezi 16:00 – 16:05 MAT 009 L. Semetse 16:05 – 16:10 MAT 010 S.S. Magubane 16:10 – 16:15 MAT 011 M. Lesufi 16:15 – 16:20 MAT 012 P.J. Maake 16:20 – 16:25 MAT 013 P. Govender 16:25 – 16:30 MAT 014 R.D. Knutsen 16:30 – 16:35 MAT 015 I. Cupido 16:35 – 16:40 MAT 016 A.F. James 16:40 – 16:45 MAT 017 D.G. Tsotetsi 16:45 – 16:50 MAT 018 V. Shumane 16:50 – 16:55 MAT 019 P.S. Mbule 16:55 – 17:00 MAT 020 L. Westraadt 17:00 – 17:05 MAT 021 N.G. Hashe 17:05 – 17:10 MAT 022 M.R. Mphahlele 17:10 – 17:15 MAT 023 H.S. Nyembe 17:15 – 17:20 MAT 024 M. Jivanji</p>	<p>15:40 – 16:00 Afternoon tea / coffee break (Exhibition Hall)</p> <p>16:00 – 17:30 Life Sciences Poster Session – sponsored by JEOL <i>Chair: Martina Crole</i></p> <p>Time: Poster Board: Presenter:</p> <p>16:00 – 16:10 LIF 001 S. Bantho 16:10 – 16:20 LIF 002 S. Gangaram 16:20 – 16:30 LIF 003 K. Doolabh 16:30 – 16:40 LIF 004 C.M. Naidoo 16:40 – 16:50 LIF 005 S. Bhoora 16:50 – 17:00 LIF 006 G.P. de Jager 17:00 – 17:10 LIF 007 L. Basson 17:10 – 17:20 LIF 008 M. Waldron</p>
<p>19:00 – 23:00 Student Evening - Sponsored by IMP / Thermo Fisher (Oceanos)</p>	

WEDNESDAY, 4 DECEMBER 2019

07:30 – 17:30 Registration Open (Athene Conference Centre Foyer, Exhibition Hall)		
08:30 – 09:30 Plenary Session (Athene 2 & 3) <i>Chair: Chant�lle Baker</i>		
08:30 – 09:30 Boris Balinsky Lecture – “Seeing is believing: Building an Imaging Platform to Elucidate Cellular and Genetic Function in <i>Mycobacterium tuberculosis</i>” – presented by <i>Digby Warner</i>		
09:30 – 10:00 Morning tea / coffee break (Exhibition Hall)		
10:00 – 12:20 Material Sciences Oral Presentations – Session 5 Athene 2 <i>Chair: Johan Westraadt</i>	10:00 – 12:20 Material Sciences Oral Presentations – Session 6 Athene 3 <i>Chair: Patricia Kooyman</i>	10:00 – 12:20 Life Sciences Oral Presentations – Session 3 Athene 4 <i>Chair: Chant�lle Baker</i>
10:00 – 10:20 THE EVOLUTION OF MICROSTRUCTURES IN HIGH VANADIUM ALLOYS - A.D. Mabeka	10:00 – 10:20 DETERMINATION OF STRUCTURAL PARAMETERS OF V/MgO CATALYSTS PREPARED USING SOLUTION COMBUSTION SYNTHESIS - E.J. Olivier	10:00 – 10:20 3D VISUALIZATION OF HUMAN HAIR WITH VARYING DEGREES OF CURLINESS USING NANO-CT - C.B. van den Berg
10:20 – 10:40 EVOLUTION OF PRECIPITATES DURING SLAB CASTING, REHEATING AND ROUGHING MILL HOT-ROLLING IN AISI 436 STEEL - A.J. Kruger	10:20 – 10:40 EXTRACTION OF NICKEL OVER-BURDEN ORE USING A FALCON CONCENTRATOR - H.H. Ramashau	10:20 – 10:40 IMPACT OF ETHINYLESTRADIOL AND GESTODENE ON VISCOELASTICITY AND ULTRASTRUCTURE OF WHOLE BLOOD - A.C. Swanepoel
10:40 – 11:00 MISORIENTATION AND GRAIN SIZE EFFECT ON CREEP PROPERTIES OF GRADE P22 STEEL - S. Von Willingh	10:40 – 11:00 CHARACTERISATION OF CHAIN-LIKE CARBON NANO-ONIONS USING ELECTRON MICROSCOPY AND OTHER RELATED TECHNIQUES - T.H. Mongwe	10:40 – 11:00 CONSIDERING HEMORHEOLOGY AS A KEY FACTOR IN PROSTATE CANCER MANAGEMENT - J. Bester
11:00 – 11:20 MICROSTRUCTURAL DETORINATION ASSESSMENT OF EX-SERVICE POWER PLANT STEEL USING CONCENTRIC BACKSCATTER IMAGING - M. van Rooyen	11:00 – 11:20 REFACETTING OF PLATINUM-RHENIUM NANOPARTICLES UNDER OPERANDO WATER GAS SHIFT CONDITIONS - R.B. Martin	11:00 – 11:20 EFFECTS OF GINGIPAIN R1 AND LPS FROM <i>Porphyromonas gingivalis</i> ON THE HUMAN COAGULATION SYSTEM - C. Venter
11:20 – 11:40 K-MEANS CLUSTERING STUDY OF PRECIPATE EVOLUTION IN 12%Cr TMF STEELS DURING LONG-TERM CREEP - W.E. Goosen	11:20 – 11:40 SYNTHESIS AND CHARACTERIZATION OF REDUCED GRAPHENE OXIDE - B. Tlhaole	11:20 – 11:40 SUCCESSIVE CHARACTERIZATION OF AUTOPHAGIC FLUX IN <i>Mycobacterium tuberculosis</i> -INFECTED MACROPHAGES - N. Okugbeni

11:40 – 12:00 MICROTEXTURE DEVELOPMENT IN AISI430 FERRITIC STAINLESS STEEL AFTER HOT ROLLING - R.D. Knutsen	11:40 – 12:00 SELECTIVE CARBIDE ETCHING OF VANADIUM AND NIOBIUM ALLOYED 25 wt% CHROMIUM WHITE CAST IRON - L.A. Mampuru	11:40 – 12:00 CHOLECALCIFEROL INDUCES CELL CYCLE ARREST AND APOPTOSIS IN HeLa CELL LINE - R. Punchoo
12:00 – 12:20 TOWARDS IMAGING CARBON ATOMS IN PLATINUM CARBIDES - M.J. Witcomb	12:00 – 12:20 MICROSTRUCTURAL INVESTIGATION IN SEVERELY DEFORMED AA5182 ALUMINIUM ALLOY - G. Morrison	
12:20 – 13:45 Lunch Break (Exhibition Hall)		
13:00 – 13:45 IMP / Thermo Fisher Lunchtime Workshop: 3D Electron Microscopy - challenges and recent developments - presented by <i>Ben Lich</i> (Athene 4)		
13:45 – 15:30 Material Sciences Workshop: "Quantitative materials characterisation and modelling" - Session 1 Athene 2 & 3 <i>Chair: Hamish Fraser</i>		
13:45 – 14:00 Welcome by <i>Jan Neethling</i>		
14:00 – 14:30 DEVELOPMENTS IN HIGH SPEED STRUCTURAL IMAGING OF LOW DIMENSIONAL MATERIALS - A.I. Kirkland		
14:30 – 15:00 ABERRATION-CORRECTED SCANNING TRANSMISSION ELECTRON MICROSCOPY OF SUPERSTRUCTURES IN NATURAL COMMENSURATE AND INCOMMENSURATE PYRRHOTITES - R.E. Dunin-Borowski		
15:00 – 15:30 Discussion		
15:30 – 16:00 Afternoon tea / coffee break (Exhibition Hall)		
16:00 – 17:30 Material Sciences Workshop: "Quantitative materials characterisation and modelling" - Session 2 Athene 2 & 3 <i>Chair: Joachim Mayer</i>		
16:00 – 16:30 STUDY OF RADIATION DAMAGE IN GaAs: FROM TEM TO Cs-CORRECTED HAADF STEM - J.H. Neethling		
16:30 – 17:00 INTEGRATED DIFFERENTIAL PHASE CONTRAST (iDPC) STEM FOR LOW Z DETECTION AND FOR LOW- DOSE IMAGING APPLICATIONS - A. Yalcin		
17:00 – 17:30 Discussion		
19:00 – late Gala Dinner – sponsored by Advanced Laboratory Solutions / JEOL Boesmanland Farm Kitchen		

THURSDAY, 5 DECEMBER 2019

07:30 – 17:30	Registration open (Exhibition Hall)
08:30 – 09:40	Material Sciences Workshop: "Quantitative materials characterisation and modelling" - Session 3 Athene 2 & 3 <i>Chair: Steven Niezgoda</i>
08:30 – 09:00	COMPUTATIONAL MATERIALS MODELING: FROM PROCESSING TO PROPERTIES - R. LeSar
09:00 – 09:30	THREE DIMENSIONAL SPATIALLY RESOLVED ACOUSTIC SPECTROSCOPY (3D-SRAS) - P.C. Collins
09:30 – 09:40	Discussion
09:40 – 10:10	Morning tea / coffee break (Exhibition Hall)
10:10 – 11:30	Material Sciences Workshop: "Quantitative materials characterisation and modelling" - Session 4 Athene 2 & 3 <i>Chair: Richard LeSar</i>
10:10 – 10:40	TRANSFORMATIONS, RECRYSTALLIZATION, MICROTEXTURE AND PLASTICITY IN TITANIUM ALLOYS: AN EMERGING VIEW - D. Banerjee
10:40 – 11:10	PRECIPITATE-MEDIATED DISLOCATION SOURCE MULTIPLICATION AND TRANSFORMATION - Y. Wang
11:10 – 11:30	Discussion
11:30 – 13:00	MSSA AGM
13:00 – 14:00	Lunch break
14:00 – 15:30	Material Sciences Workshop: "Quantitative materials characterisation and modelling" - Session 5 Athene 2 & 3 <i>Chair: Raj Banerjee</i>
14:00 – 14:30	QUANTITATIVE STEM TOMOGRAPHY MEASUREMENTS OF INTERFACE ROUGHNESS FOR APERIODIC Mo-B4C MULTILAYERS SYSTEMS - W. Jaeger
14:30 – 15:00	STRUCTURE-TO-PROPERTY RELATIONSHIPS IN 9-12% Cr CSEF STEELS - J.E. Westraadt
15:00 – 15:30	Discussion
15:30 – 16:00	Afternoon tea break
16:00 – 17:30	Material Sciences Workshop: "Quantitative materials characterisation and modelling" - Session 6 Athene 2 & 3 <i>Chair: Dipankar Banerjee</i>
16:00 – 16:30	MICROSTRUCTURE AND FATIGUE CRACK GROWTH MECHANISMS OF TI-6AL-4V FABRICATED BY LASER POWDER BED FUSION - T.H. Becker
16:30 – 17:00	PRIOR AUSTENITE TRANSFORMATION, IMAGE SEGMENTAION, CLUSTERING, AND OPTIMIZATION VIA GRAPH CUTS - S.R. Niezgoda
17:00 – 17:30	Discussion
19:00 – 22:00	Dinner at Kapstadt Brauerhaus (for those who have booked for the workshop on Friday 6 December)

FRIDAY, 6 DECEMBER 2019

08:00 – 13:30 Registration open (Athene Conference Centre Foyer)

08:30 – 10:30 **Material Sciences Workshop: "Quantitative materials characterisation and modelling" - Session 7**
Athene 2
Chair: Johan Westraadt

08:30 – 09:00 COUPLED TEM AND ATOM PROBE INVESTIGATION OF PHASE INVERSION IN A HIGH ENTROPY ALLOY
- R. Banerjee

09:00 – 09:30 UNAMBIGUOUS EBSD INDEXING OF COMPLEX MULTI-PHASE MICROSTRUCTURES
- M. de Graef

09:30 – 10:00 NANOSWITCHES: TEM CHARACTERIZATION OF RESISTIVELY SWITCHING CHALCOGENIDES
- J. Mayer

10:00 – 10:30 Discussion

10:30 – 11:00 Morning tea / coffee break (Athene Conference Centre Foyer)

11:00 – 12:30 **Material Sciences Workshop: "Quantitative materials characterisation and modelling" - Session 8**
Athene 2
Chair: Jan Neethling

11:00 – 11:30 MACHINE LEARNING FOR STRUCTURE TO PROPERTY PREDICTIONS AND IMAGE ANALYSIS
- J. Tiley

11:30 – 12:00 THE ROLE OF STRUCTURAL AND COMPOSITIONAL INSTABILITIES ON THE MICROSTRUCTURAL EVOLUTION OF METASTABLE BETA TITANIUM ALLOYS
- H.L. Fraser

12:00 – 12:30 Discussion & closing

12:30 – 13:30 Lunch break

13:30 Departure